

1           1.     A method of managing a hierarchical storage management (HSM)  
2 environment, the environment including at least one HSM server and at least one file server  
3 having stored a managed file system, wherein the at least one HSM server and the at least  
4 one file server are interconnected via a network and wherein digital data files are migrated  
5 temporarily from the at least one file server to the at least one HSM server, the method  
6 comprising:

7                     providing at least one list for identifying candidate data files to be migrated;  
8                     prespecifying a scanning scope;  
9                     scanning the managed file system until the scanning scope is reached;  
10                    selecting migration candidate data files according to at least one attribute;  
11                    recording the selected migration candidate data files in the provided at least  
12 one list for identifying candidate data files; and  
13                    migrating at least part of the selected candidate data files identified in the at  
14 least one list for identifying candidate data files from the file server to the HSM  
15 server.

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17           2.     The method according to claim 1, wherein the scanning scope is determined  
18 by the number of candidate data files and wherein the managed file system is scanned until  
19 having reached the prespecified number of migration candidate data files.

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21           3.     The method according to claim 1, wherein the scanning scope is determined  
22 by the total amount of data for the candidate data files and wherein the managed file system  
23 is scanned until having the prespecified amount of data.  
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1           4.       The method according to claim 1, wherein the scanning of the managed file  
2 system is resumed at a location of the managed file system where a previous scanning is left  
3 off, and continued accordingly.

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5           5.       The method according to claim 1, wherein replacing a migrated data file in  
6 the managed file system by a stub file providing at least information about the location of  
7 the migrated data file on the HSM server.

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9           6.       The method according to claim 1, further comprising monitoring a current  
10 state of the managed file system and initiating automigration dependent on the monitored  
11 current state of the managed file system.

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13           7.       The method according to claim 6, comprising the further steps of  
14 automigrating candidate data files with respect to the list for identifying candidate data files  
15 and assigning a unique identifier to each of the migrated candidate data files.

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17           8.       The method according to claim 7, wherein the unique identifier is specific to  
18 the underlying file system allowing direct access to a migrated data file.

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20           9.       The method according to any of claim 6, wherein providing two lists for  
21 identifying candidate data files, whereby the first list is generated and/or updated by a  
22 scanning process and whereby the second list is used by a automigration process, and  
23 whereby the automigration process gathers the first list from the scanning process when all  
24 candidate data files of the second list are migrated.

1           10.     The method according to any of claim 9, wherein the automigration process  
2 is performed by a master/slave concept where the master controls the automigration process  
3 and selects at least one slave to migrate candidate data files provided by the master.  
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5           11.     The method according to claim 1, comprising the additional steps of ranking  
6 and sorting the candidate data files contained in the at least one list for identifying candidate  
7 data files, in particular with respect to the a file size and/or time stamp of the data files  
8 contained in the at least one list for identifying candidate data files.  
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10           12.     The method according to claim 1, wherein the scanning of the managed file  
11 system is initiated dependent on expiration of a prespecified wait interval or initiated by the  
12 automigration process.  
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14           13.     A method of reconciling a managed file system migrated from a file server  
15 to an hierarchical storage management (HSM) server via a network in accordance with the  
16 method according to any of claims 7 to 12, with a current state of the managed file system  
17 on the file server, wherein data files migrated to the HSM server are recorded in a list of  
18 migrated data files having a unique identifier for each of the migrated data files, the method  
19 comprising the steps of:

20                 querying the list of migrated data files migrated from the managed file server  
21 to the HSM server;

22                 for each file entry in the list of migrated data files, retrieving from the  
23 managed file system at least one attribute of the migrated data file that is identified  
24 by the corresponding unique identifier;

25                 comparing the retrieved attributes with the corresponding attributes stored in  
26 the list of migrated data files; and

1 updating the HSM server for the migrated managed file system dependent on  
2 the results of the preceding step of comparing.  
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4 14. The method according to claim 13, wherein performing the steps of claim 13  
5 by a reconciling process and wherein the reconciling process requests the list of migrated  
6 data files via the network from the HSM server.  
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8 15. A hierarchical storage management (HSM) system including at least one HSM  
9 server and at least one file server having stored a managed file system, the at least one HSM  
10 server and the at least one file server being interconnected via a network, where data files are  
11 migrated temporarily from the at least one file server to the at least one HSM, the system  
12 comprising:

13 a first means for scanning the file system and for identifying candidate data  
14 files to be migrated;

15 a second means for monitoring the managed file system;

16 a third means for migrating candidate data files to the HSM server;

17 a fourth means for reconciling the managed file system.  
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19 16. The system according to claim 15, further comprising a means for replacing  
20 a migrated data file in the managed file system by a stub file providing at least information  
21 about the location of the migrated data file on the HSM server.  
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23 17. The system according to claim 15, further comprising means for assigning a  
24 unique identifier to at least part of the candidate data files stored in the storage means.  
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1           18.     The system according to claim 15, further comprising at least two storage  
2 means for identifying candidate data files, where the first storage means is generated and/or  
3 updated by a scanning process and where the at least second storage means is used by an  
4 automigration process, and where the automigration process gathers the content of the first  
5 storage means from the scanning process when all candidate data files of the at least second  
6 storage means are migrated.

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8           19.     A data processing program for execution in a data processing system  
9 comprising software code portions for performing a method comprising:

10           providing at least one list for identifying candidate data files to be migrated;  
11           prespecifying a scanning scope;  
12           scanning the managed file system until the scanning scope is reached;  
13           selecting migration candidate data files according to at least one attribute;  
14           recording the selected migration candidate data files in the provided at least one list  
15 for identifying candidate data files; and  
16           migrating at least part of the selected candidate data files identified in the at least one  
17 list for identifying candidate data files from the file server to the HSM server.

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19           20.     An article of manufacture comprising a program storage medium readable by  
20 a processor and embodying one or more instructions executable by the processor to perform  
21 a method comprising:

22           providing at least one list for identifying candidate data files to be migrated;  
23           prespecifying a scanning scope;  
24           scanning the managed file system until the scanning scope is reached;  
25           selecting migration candidate data files according to at least one attribute;  
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1 recording the selected migration candidate data files in the provided at least one list  
2 for identifying candidate data files; and  
3 migrating at least part of the selected candidate data files identified in the at least one  
4 list for identifying candidate data files from the file server to the HSM server.  
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